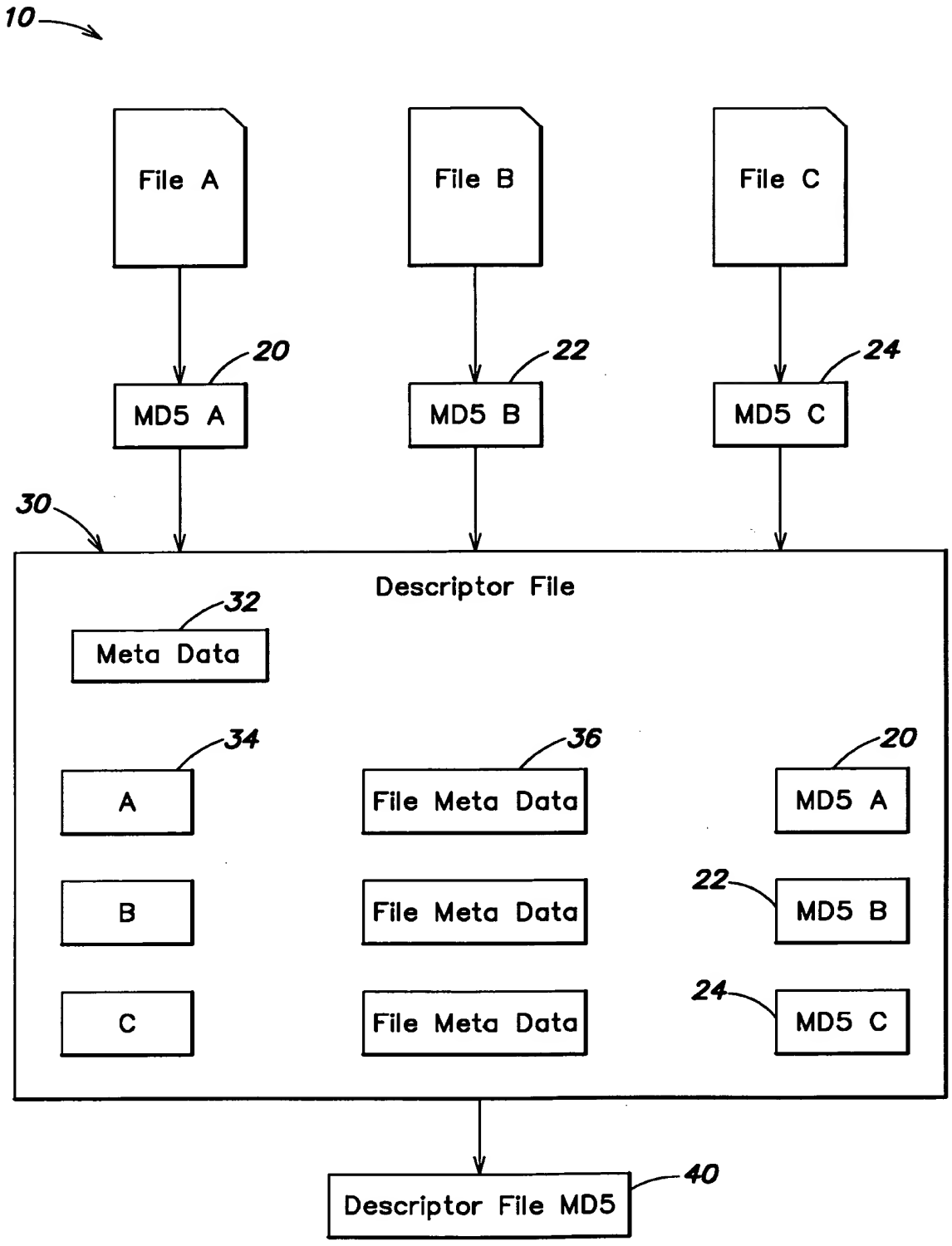


FIG. 1
(Prior Art)

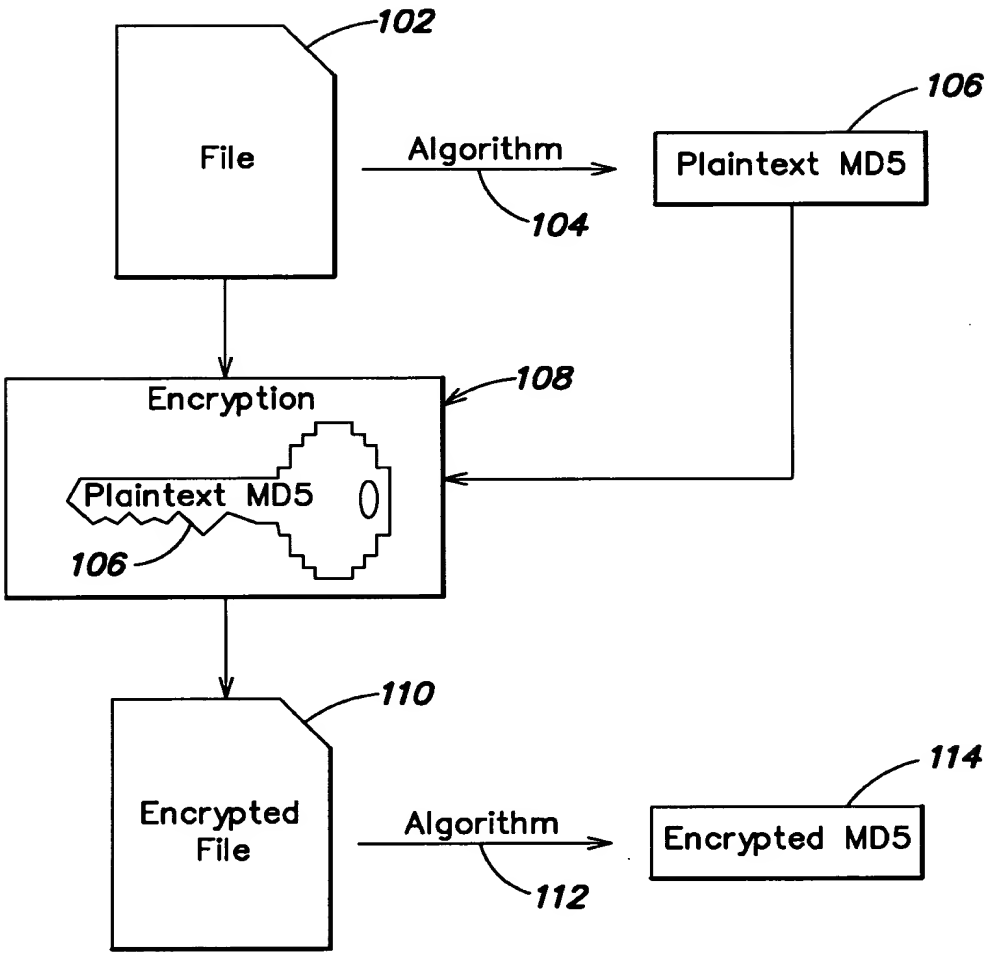

102
File
Algorithm
104
106
Plaintext MD5
108
Encryption
Plaintext MD5
106
110
Encrypted
File
Algorithm
112
114
Encrypted MD5

FIG. 2

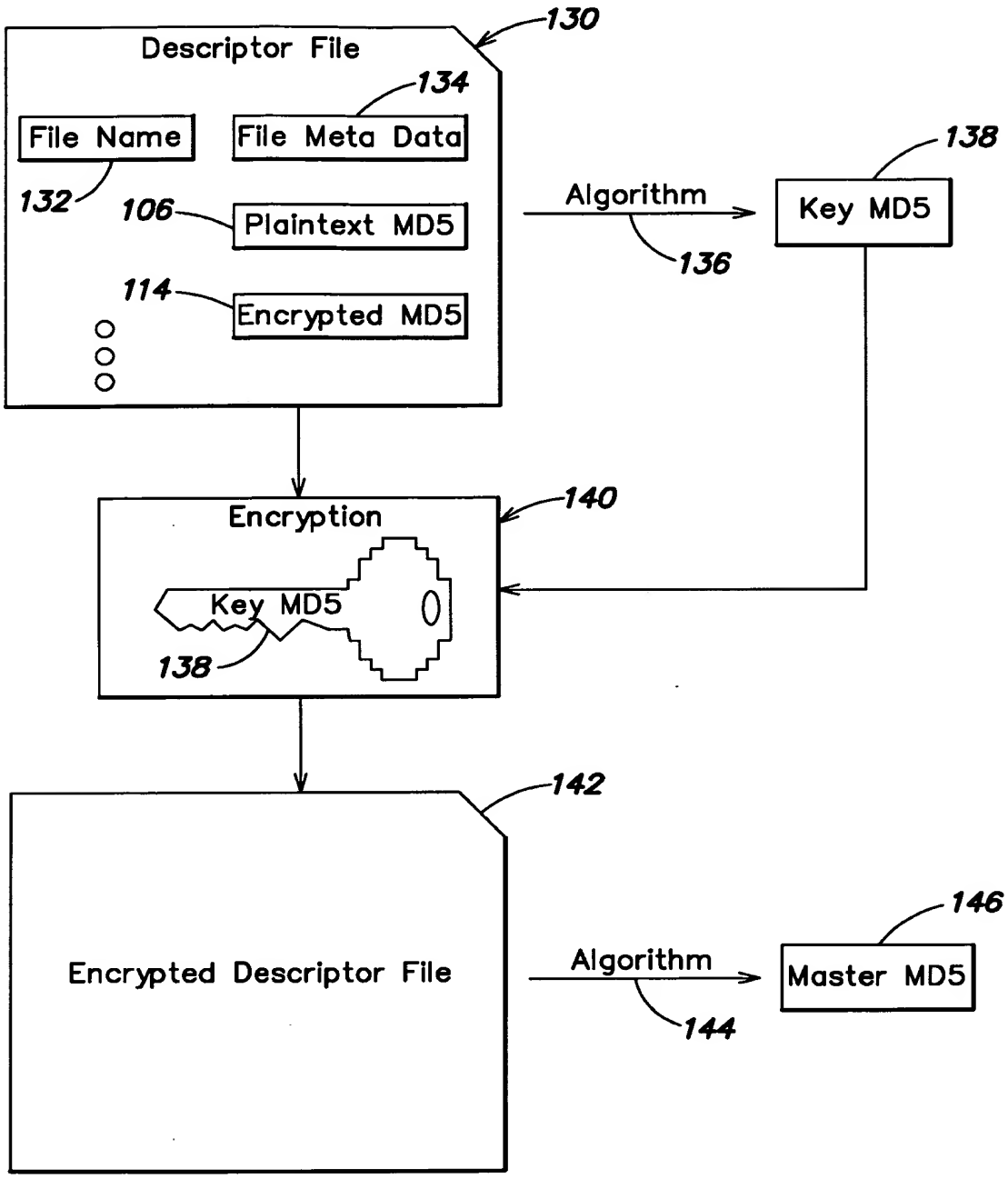

130
Descriptor File
134
File Name
File Meta Data
132
106
Plaintext MD5
Algorithm
138
Key MD5
136
114
Encrypted MD5
140
Encryption
Key MD5
138
142
Encrypted Descriptor File
Algorithm
146
Master MD5
144

FIG. 3

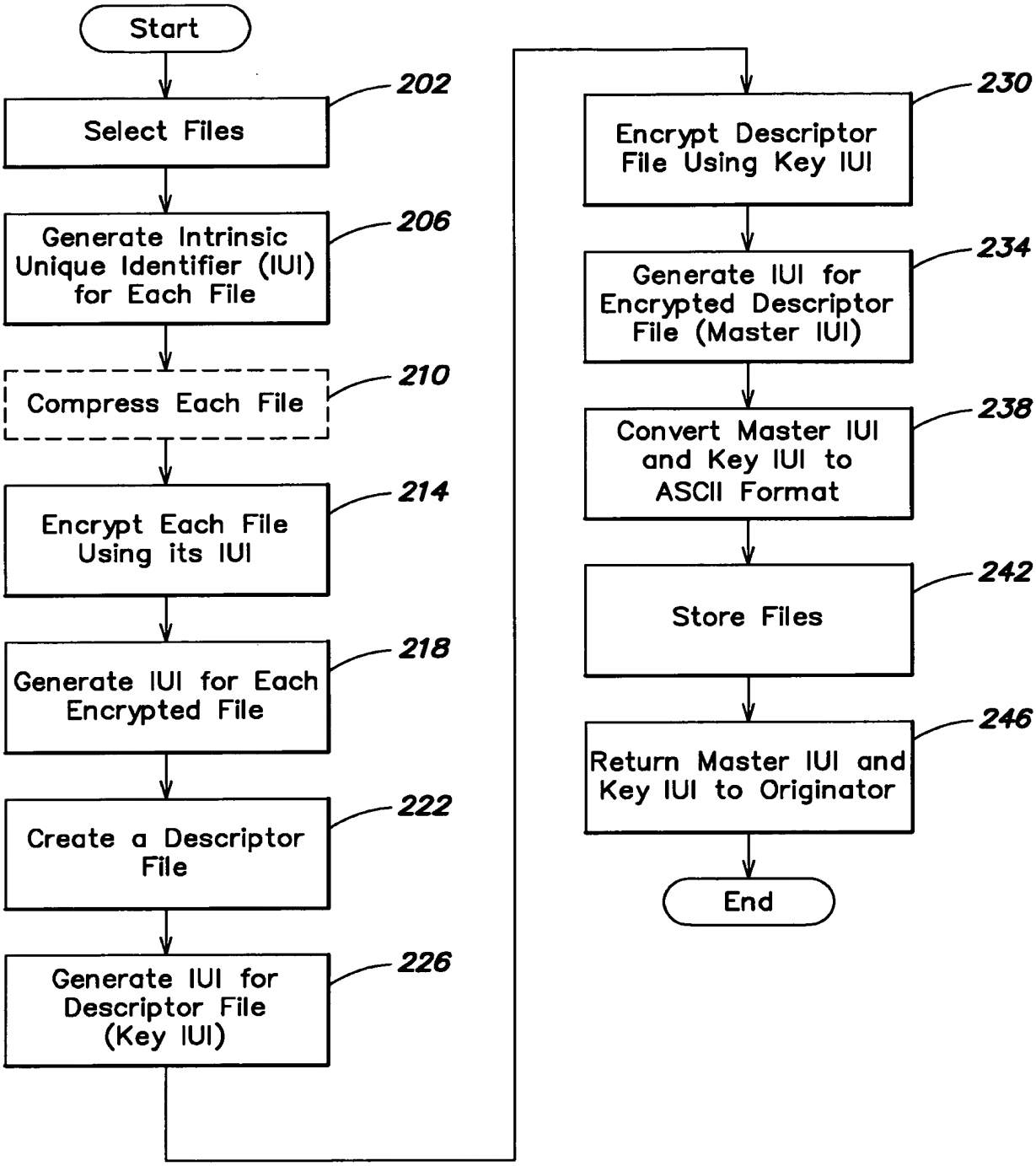

Start
Select Files
202
Generate Intrinsic Unique Identifier (IUI) for Each File
206
Compress Each File
210
Encrypt Each File Using its IUI
214
Generate IUI for Each Encrypted File
218
Create a Descriptor File
222
Generate IUI for Descriptor File (Key IUI)
226
Encrypt Descriptor File Using Key IUI
230
Generate IUI for Encrypted Descriptor File (Master IUI)
234
Convert Master IUI and Key IUI to ASCII Format
238
Store Files
242
Return Master IUI and Key IUI to Originator
246
End

FIG. 4

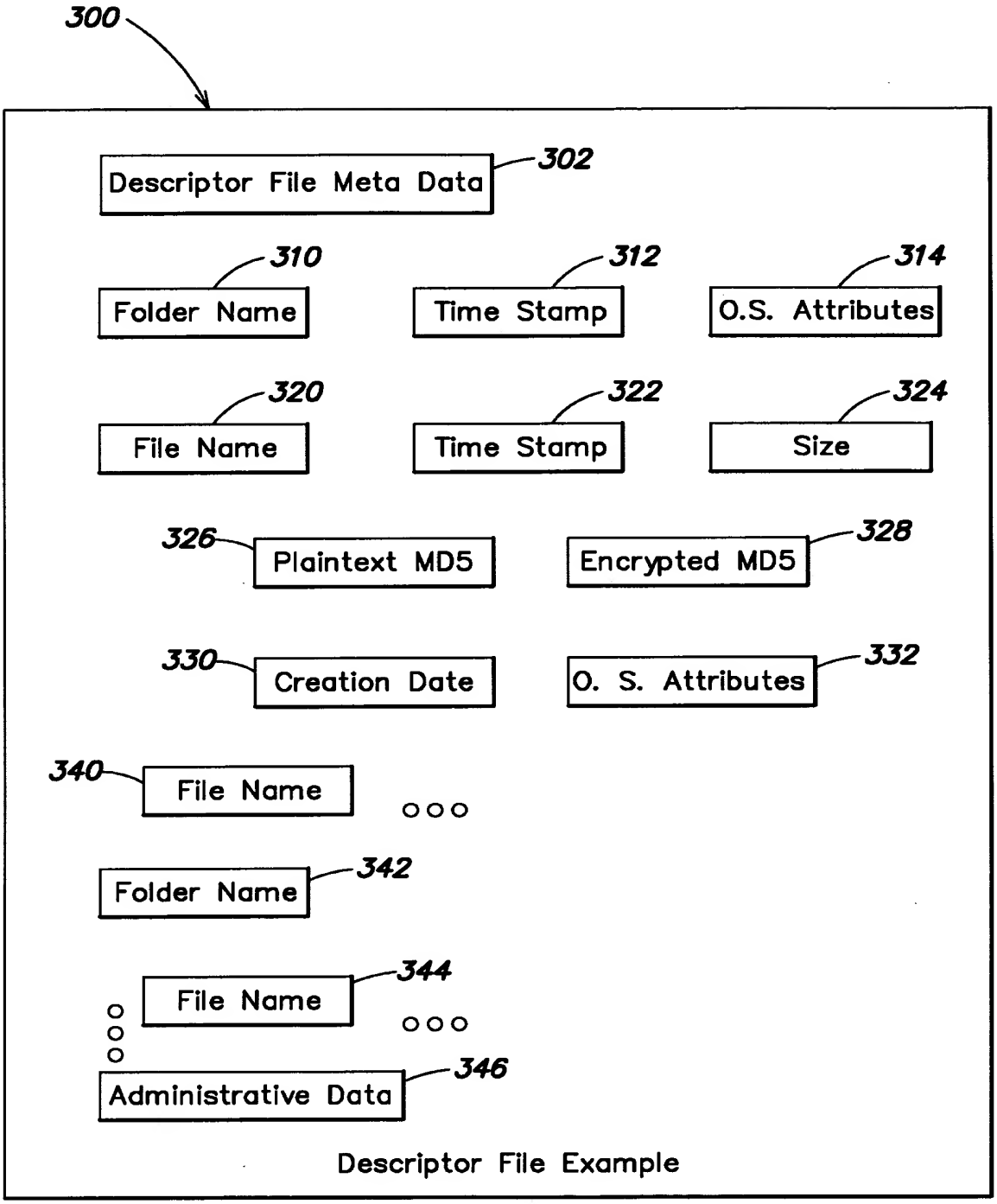

300
Descriptor File Meta Data
302
310
Folder Name
312
Time Stamp
314
O.S. Attributes
320
File Name
322
Time Stamp
324
Size
326
Plaintext MD5
328
Encrypted MD5
330
Creation Date
332
O. S. Attributes
340
File Name
Folder Name
342
File Name
344
Administrative Data
346
Descriptor File Example

FIG. 5

```
<?xml version='1.0'?>
<!DOCTYPE ecml SYSTEM "http://www.waveresearch.be/dtd/ecml.dtd">
<ecml version="2.0" compatibleversion="2.0">
  <eclipdescription>
    <meta name="type" value="Dell"/>
    <meta name="name" value="Encrypted Network Package"/>
    <meta name="comment" value="this is a comment"/>
    <meta name="author.name" value="Abraham Felsenstein"/>
    <meta name="author.email" value="syncromedia@ping.be"/>
    <meta name="encoding" value="StandardCrypt"/>
    <meta name="compatibletype" value="Standard"/>
    <meta name="numfiles" value="4"/>
    <meta name="numfolders" value="1"/>
    <meta name="totalsize" value="9011"/>
    <meta name="creation.date" value="1999.07.22 11:25:44
GMT+02:00"/>
    <meta name="author.organization" value=""/>
    <keyword name="Contract_ID" value="0005" namespace="dell"/>
    <keyword name="Contract_Name" value="Sales 005"
namespace="dell"/>
    <keyword name="Contract_Destination" value="John Doe"
namespace="dell"/>
  </eclipdescription><!---->
  <eclipcontents>
    <hfml>
      <folder name="net" winattributes.readonly="false"
 winattributes.hidden="false" winattributes.system="false"
 winattributes.archive="false" winattributes.temp="false">
        <file name="FtpClient.class" size="3648"
 md5="FVHLQCT1TFJ62x4ULSLQF94ILRP"
 decoded.md5="3SBUVEESBOAVLxB061D0E518E7G" decoded.size="7064"
 whenmodified="1999.06.14 13:20:50 GMT+02:00"
 whencreated="1999.07.22 11:03:31 GMT+02:00"
 winattributes.readonly="false" winattributes.hidden="false"
 winattributes.system="false" winattributes.archive="true"
 winattributes.temp="false"/>
```

Fig. 6A-1
Fig. 6A-2

FIG. 6A-1

```
        <file name="FtpInputStream.class" size="560"
md5="CSVINULL4RDSQx447NTI4T4BQGB"
decoded.md5="A5UU028DBF7V9xDGOD31VMOH24E" decoded.size="978"
whenmodified="1999.06.14 13:20:50 GMT+02:00"
whencreated="1999.07.22 11:03:31 GMT+02:00"
winattributes.readonly="false" winattributes.hidden="false"
winattributes.system="false" winattributes.archive="true"
winattributes.temp="false"/>
        <file name="FtpLoginException.class" size="320"
md5="2IIKCDL66E173x0MF09R0E7IHH1"
decoded.md5="C1KHALJ3VDIL0xF8QJ3PDPLJTUL" decoded.size="491"
whenmodified="1999.06.14 13:20:50 GMT+02:00"
whencreated="1999.07.22 11:03:32 GMT+02:00"
winattributes.readonly="false" winattributes.hidden="false"
winattributes.system="false" winattributes.archive="true"
winattributes.temp="false"/>
        <file name="FtpProtocolException.class" size="320"
md5="ARC34P9F68KA9xA4ECG9O3L0K42"
decoded.md5="9UA8J446KV097x39EM0CJHDU5KI" decoded.size="478"
whenmodified="1999.06.14 13:20:50 GMT+02:00"
whencreated="1999.07.22 11:03:32 GMT+02:00"
winattributes.readonly="false" winattributes.hidden="false"
winattributes.system="false" winattributes.archive="true"
winattributes.temp="false"/>
      </folder><!--net-->
    </hfml><!---->
  </eclipcontents><!---->
</ecml><!---->
```

Descriptor File Example

FIG. 6A–2

```
<?xml version='1.0'?>
<!DOCTYPE ecml SYSTEM "http://www.waveresearch.be/dtd/ecml.dtd">
<ecml version="2.0" compatibleversion="2.0">
  <eclipdscription>
    <meta name="type" value="Dell"/>
    <meta name="name" value="Encrypted Network Package"/>
    <meta name="comment" value="this is a comment"/>
    <meta name="author.name" value="Abraham Felsenstein"/>
    <meta name="author.email" value="syncromedia@ping.be"/>
    <meta name="encoding" value="StandardCrypt"/>
    <meta name="compatibletype" value="Standard"/>
    <meta name="numfiles" value="4"/>
    <meta name="numfolders" value="1"/>
    <meta name="totalsize" value="9011"/>
    <meta name="creation.date" value="1999.07.22 11:25:44
GMT+02:00"/>
    <meta name="author.organization" value=""/>
    <keyword name="Contract_ID" value="0005" namespace="dell"/>
  </eclipdescription><!---->
  <eclipcontents>
    <keyfile md5="82FO4VM1EQJSDx1UJ4G9V3TT57E" size="896"
whenmodified="1999.07.22 11:25:44 GMT+02:00"/>
    <file md5="FVHLQCT1TFJ62x4ULSLQF94ILRP" size="3648"
whenmodified="1999.06.14 13:20:50 GMT+02:00"/>
    <file md5="CSVINULL4RDSQx447NTI4T4BQGB" size="560"
whenmodified="1999.06.14 13:20:50 GMT+02:00"/>
    <file md5="2IIKCDL66E173x0MF09R0E7IHH1" size="320"
whenmodified="199.06.14 13:20:50 GMT+02:00"/>
    <file md5="ARC34P9F68KA9xA4ECG9O3L0K42" size="320"
whenmodified="1999.06.14 13:20:50 GMT+02:00"/>
  </eclipcontents><!---->
  <eclipsorigin clipboxid="040-762-05-413-6338" clipboxcount="9"
seatid="c7cd7b12-bcdf-11d2-b045-00400569895e">
  </eclipsorigin><!---->
  <eclipsignature digest="gliWJo2zuqBcRTgTrHD4Kg==
"/>
</ecml><!---->
```

Flattened Descriptor File Example

FIG. 6B

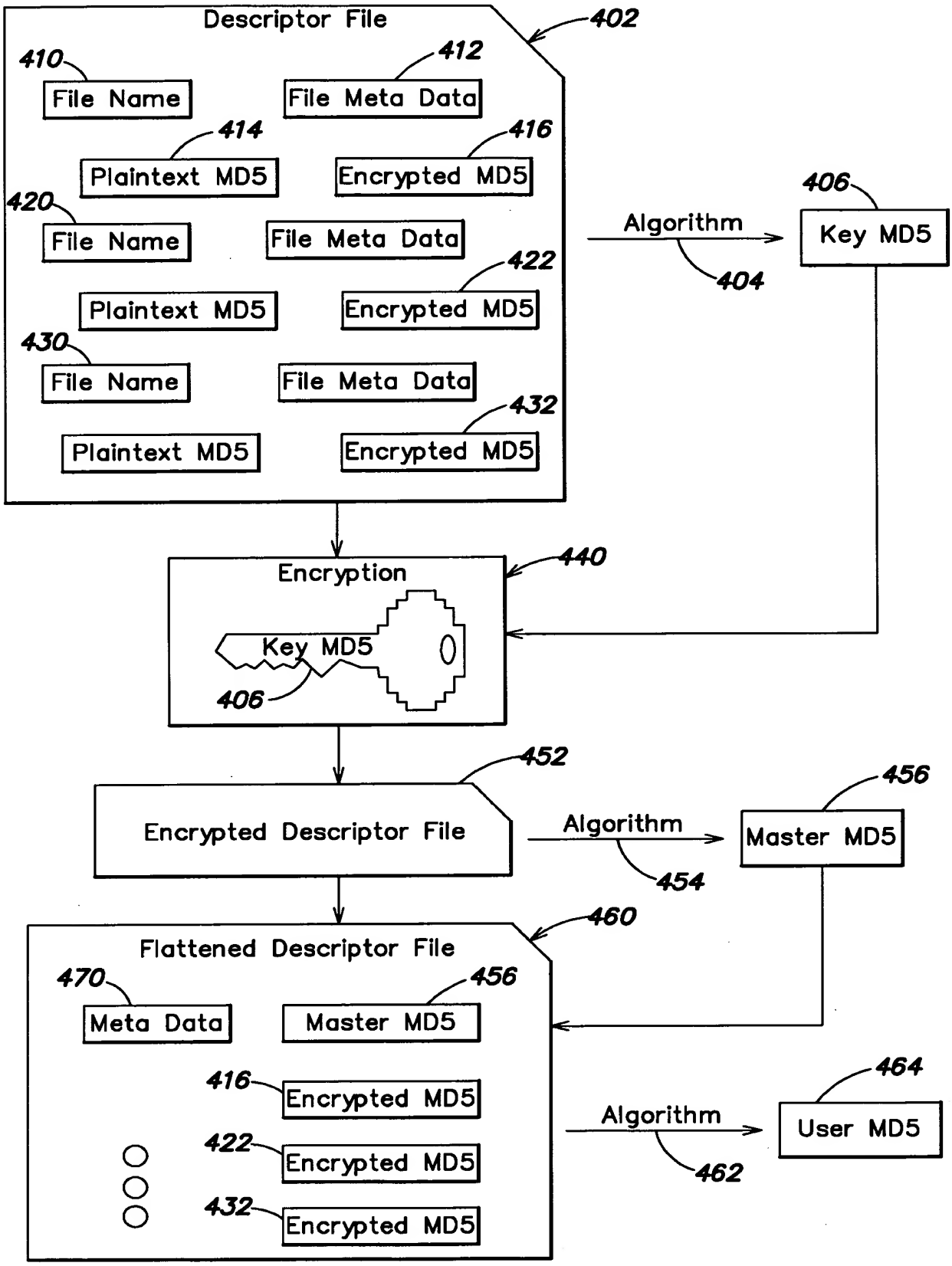

Descriptor File
402
410
File Name
412
File Meta Data
414
Plaintext MD5
416
Encrypted MD5
420
File Name
File Meta Data
422
Plaintext MD5
Encrypted MD5
430
File Name
File Meta Data
432
Plaintext MD5
Encrypted MD5
Algorithm
404
406
Key MD5
Encryption
440
Key MD5
406
452
Encrypted Descriptor File
Algorithm
454
456
Master MD5
460
Flattened Descriptor File
470
Meta Data
456
Master MD5
416
Encrypted MD5
422
Encrypted MD5
432
Encrypted MD5
Algorithm
462
464
User MD5

FIG. 7

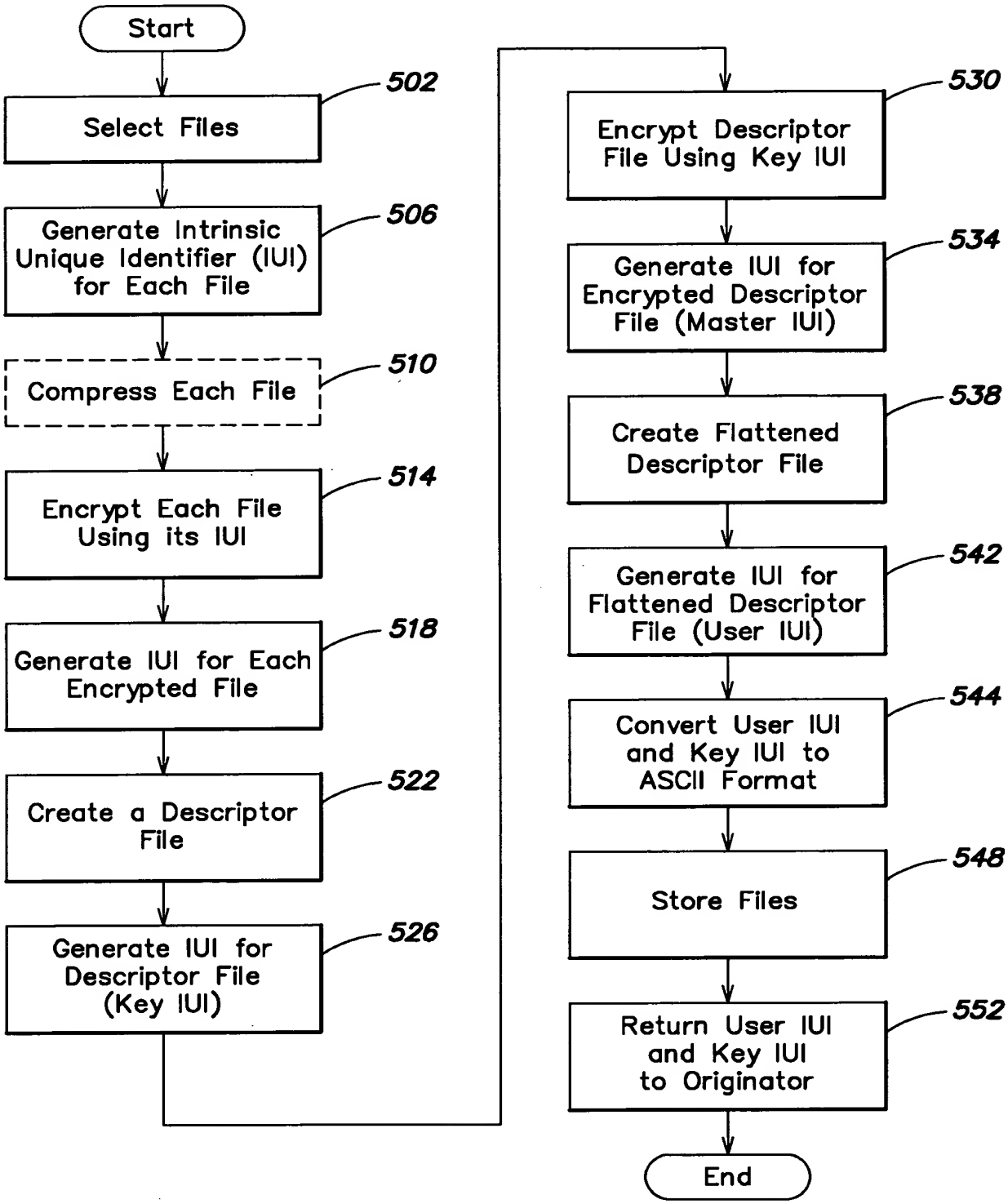

Start
Select Files
502
Generate Intrinsic Unique Identifier (IUI) for Each File
506
Compress Each File
510
Encrypt Each File Using its IUI
514
Generate IUI for Each Encrypted File
518
Create a Descriptor File
522
Generate IUI for Descriptor File (Key IUI)
526
Encrypt Descriptor File Using Key IUI
530
Generate IUI for Encrypted Descriptor File (Master IUI)
534
Create Flattened Descriptor File
538
Generate IUI for Flattened Descriptor File (User IUI)
542
Convert User IUI and Key IUI to ASCII Format
544
Store Files
548
Return User IUI and Key IUI to Originator
552
End

FIG. 8

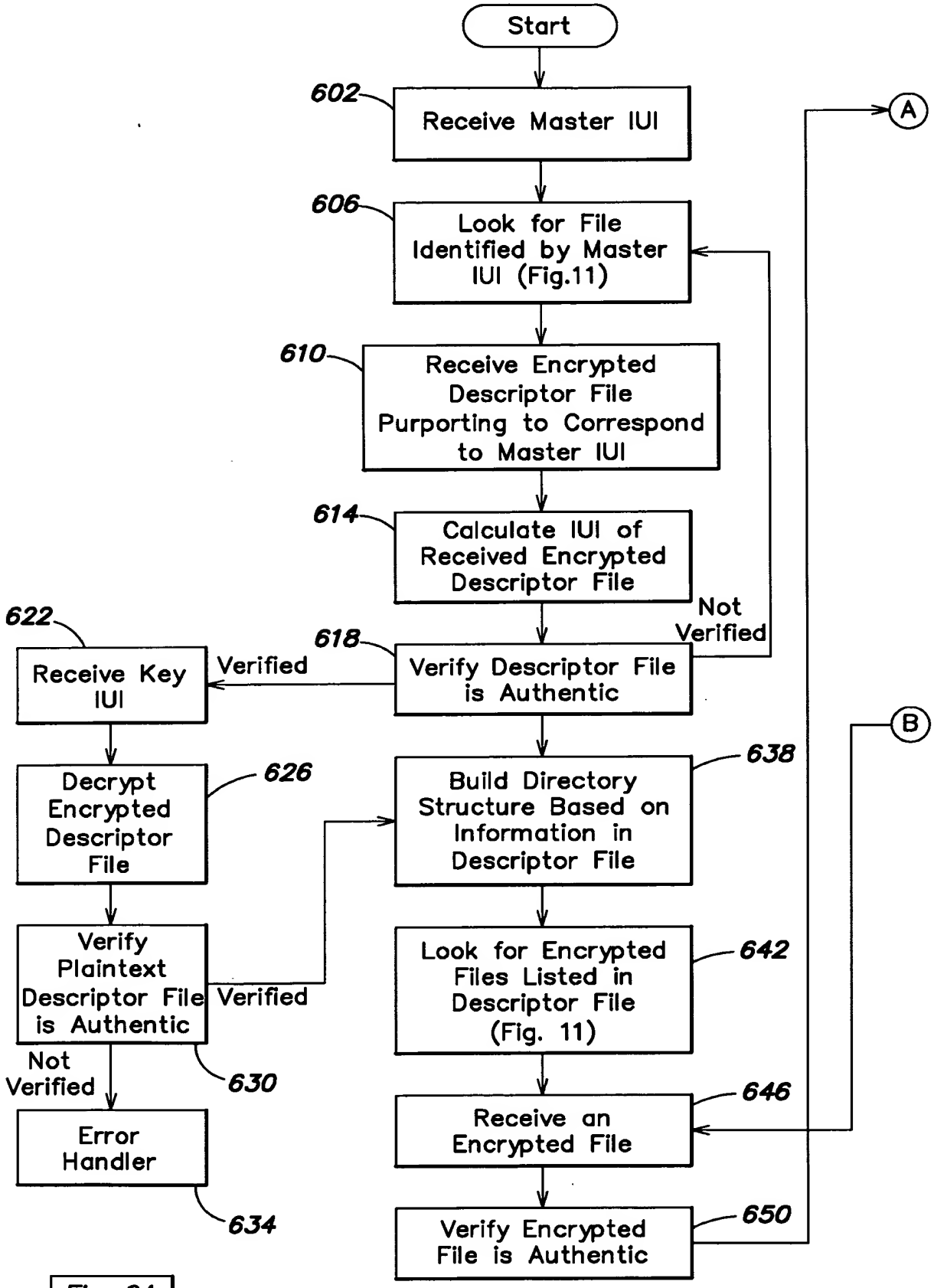


Fig. 9A
Fig. 9B

FIG. 9A

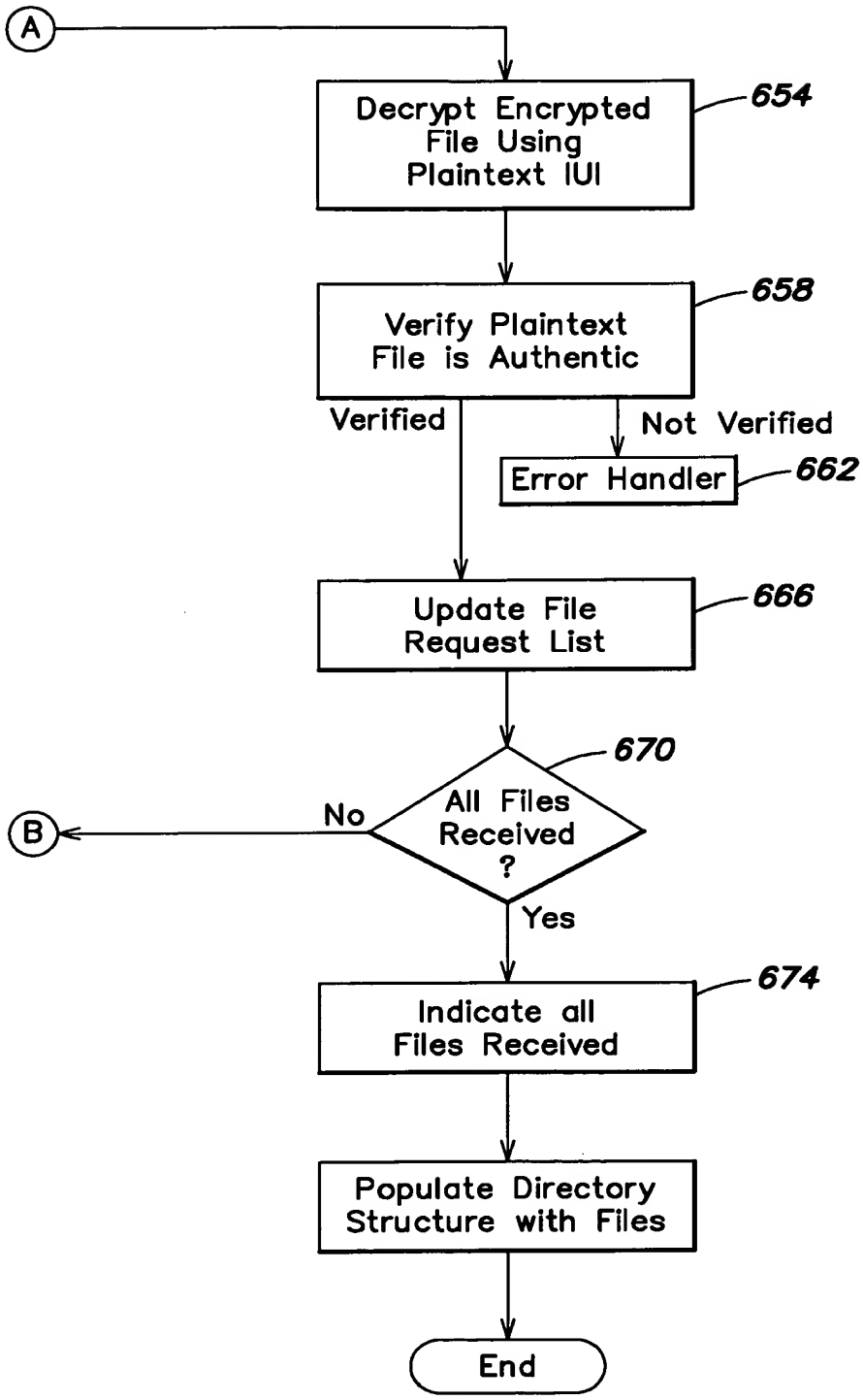

A
Decrypt Encrypted File Using Plaintext IUI
654
Verify Plaintext File is Authentic
658
Verified
Not Verified
Error Handler
662
Update File Request List
666
670
All Files Received ?
No
B
Yes
Indicate all Files Received
674
Populate Directory Structure with Files
End

FIG. 9B

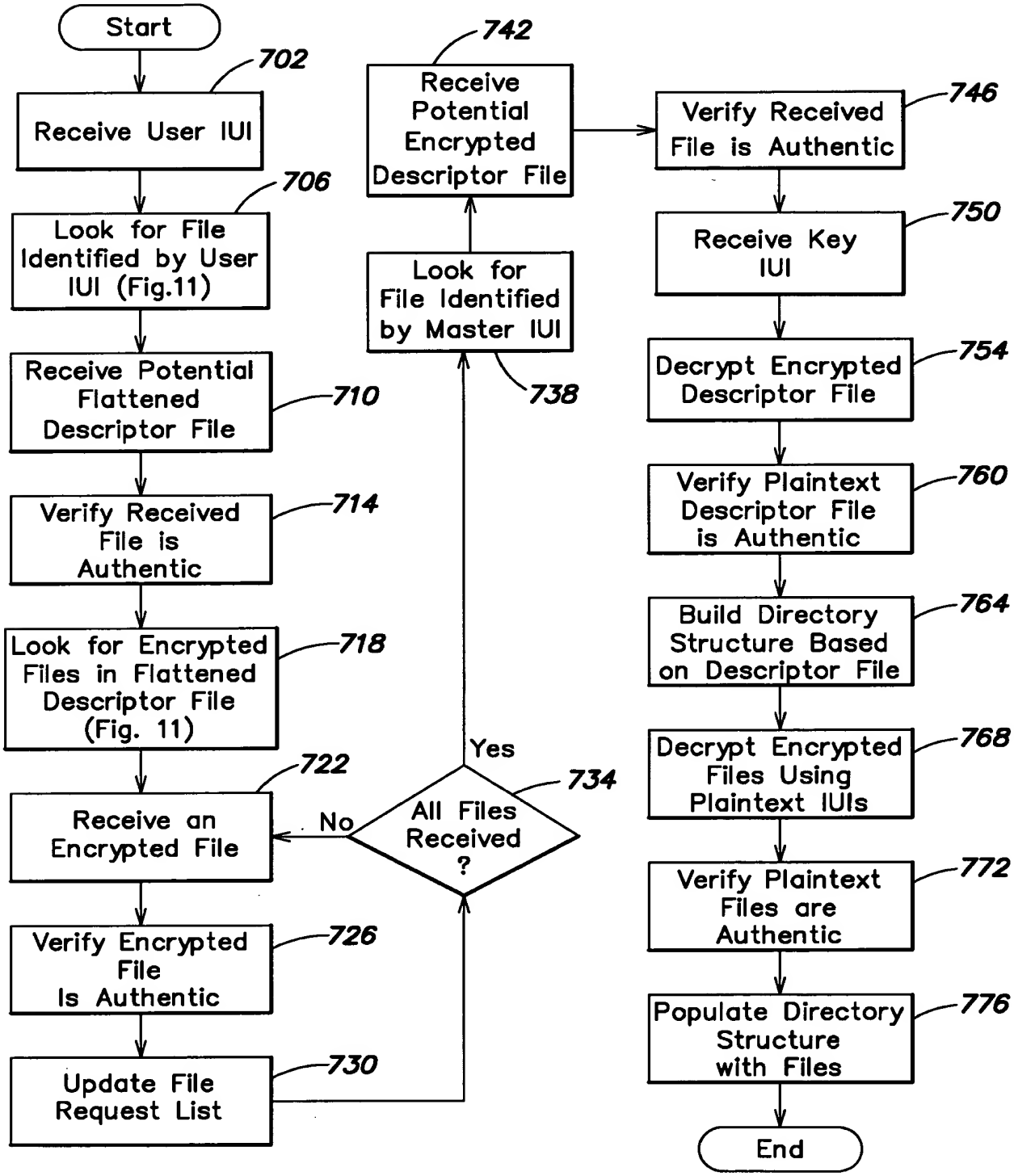

Start
Receive User IUI
702
Look for File Identified by User IUI (Fig.11)
706
Receive Potential Flattened Descriptor File
710
Verify Received File is Authentic
714
Look for Encrypted Files in Flattened Descriptor File (Fig. 11)
718
Receive an Encrypted File
722
Verify Encrypted File Is Authentic
726
Update File Request List
730
All Files Received ?
734
No
Yes
Look for File Identified by Master IUI
738
Receive Potential Encrypted Descriptor File
742
Verify Received File is Authentic
746
Receive Key IUI
750
Decrypt Encrypted Descriptor File
754
Verify Plaintext Descriptor File is Authentic
760
Build Directory Structure Based on Descriptor File
764
Decrypt Encrypted Files Using Plaintext IUIs
768
Verify Plaintext Files are Authentic
772
Populate Directory Structure with Files
776
End

FIG. 10

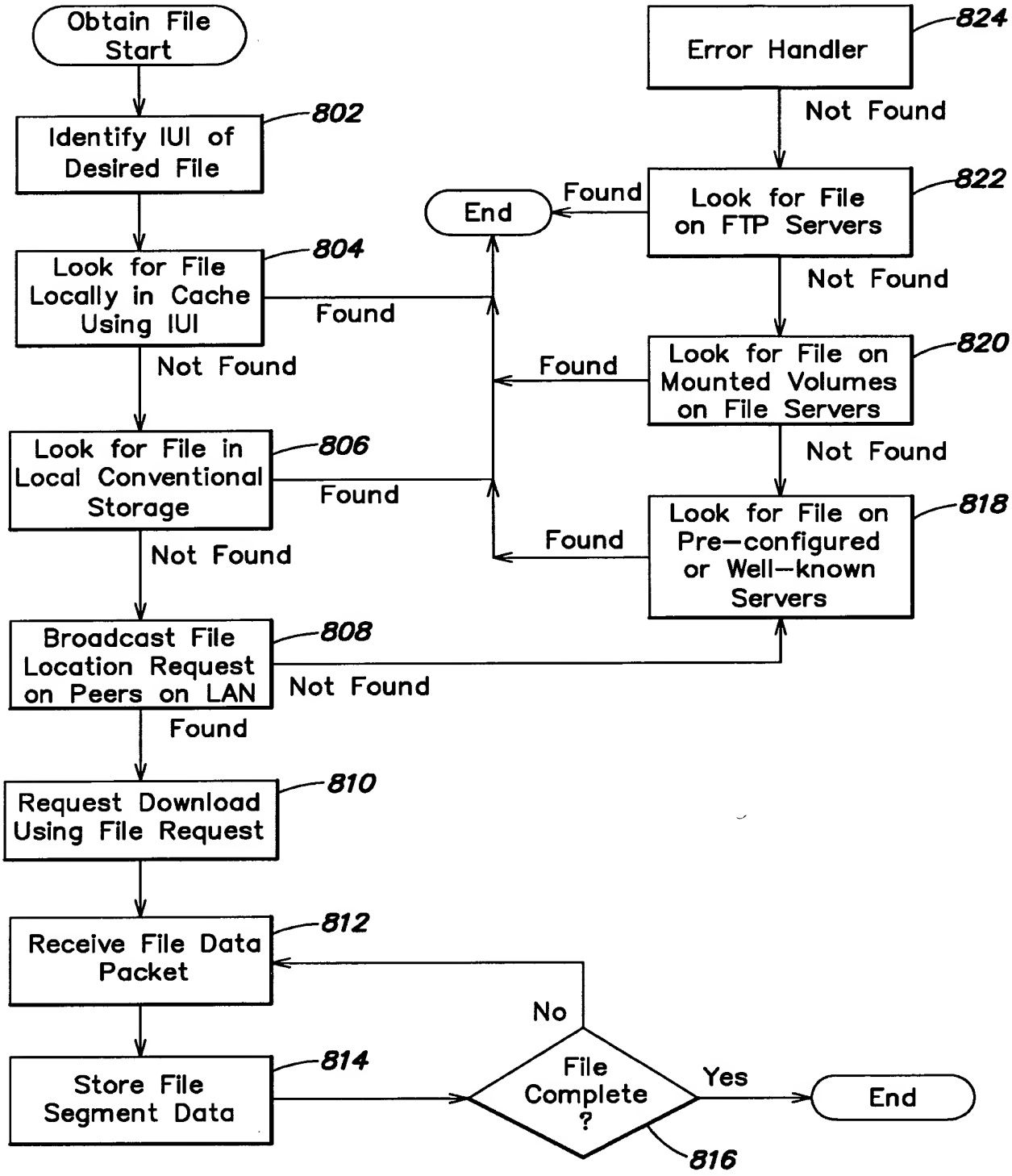

Obtain File Start
Identify IUI of Desired File
802
Look for File Locally in Cache Using IUI
804
Found
Not Found
Look for File in Local Conventional Storage
806
Found
Not Found
Broadcast File Location Request on Peers on LAN
808
Not Found
Found
Request Download Using File Request
810
Receive File Data Packet
812
Store File Segment Data
814
No
File Complete ?
Yes
816
End
Error Handler
824
Not Found
Look for File on FTP Servers
822
Found
End
Not Found
Look for File on Mounted Volumes on File Servers
820
Found
Not Found
Look for File on Pre-configured or Well-known Servers
818
Found

FIG. 11

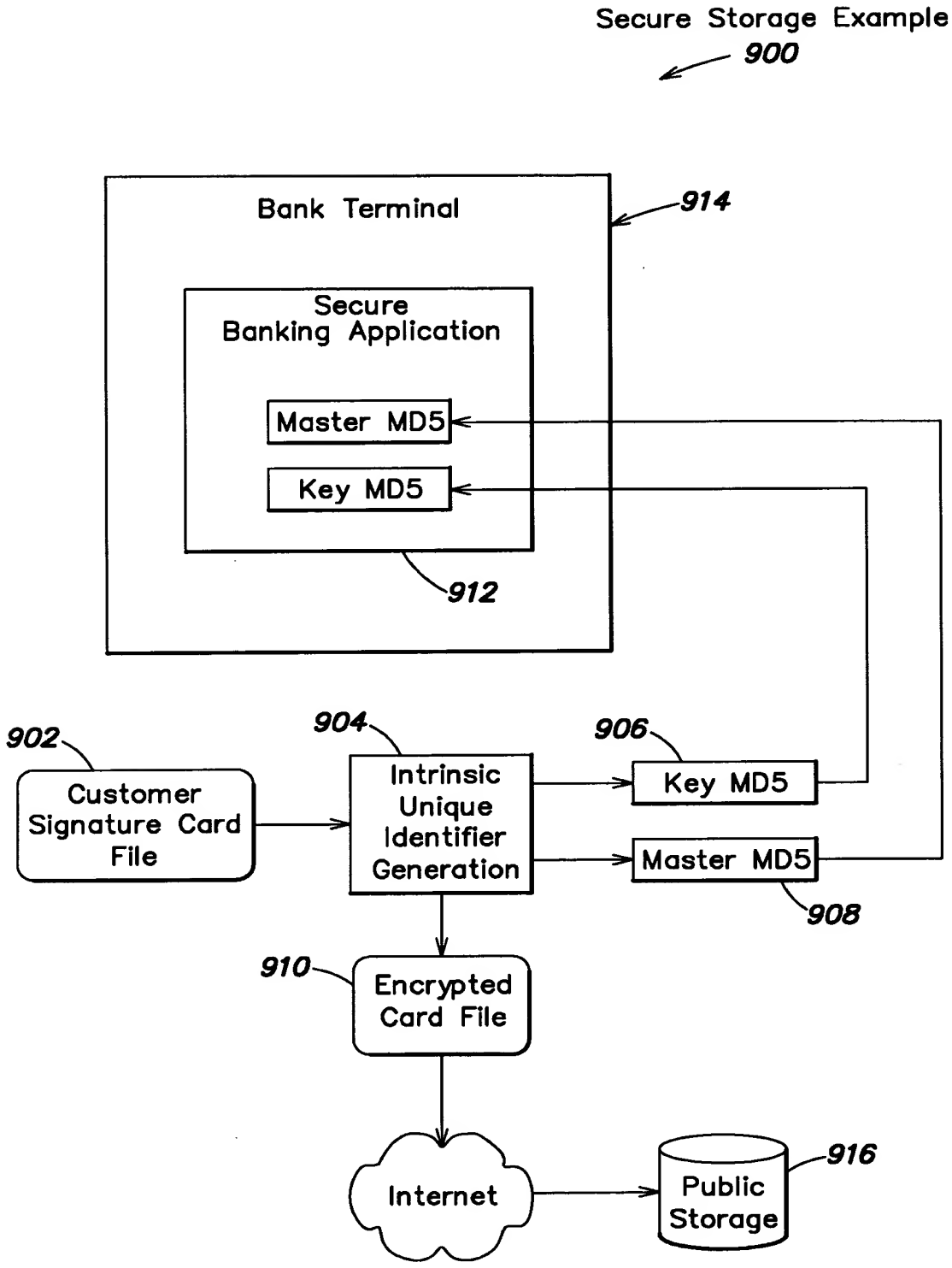
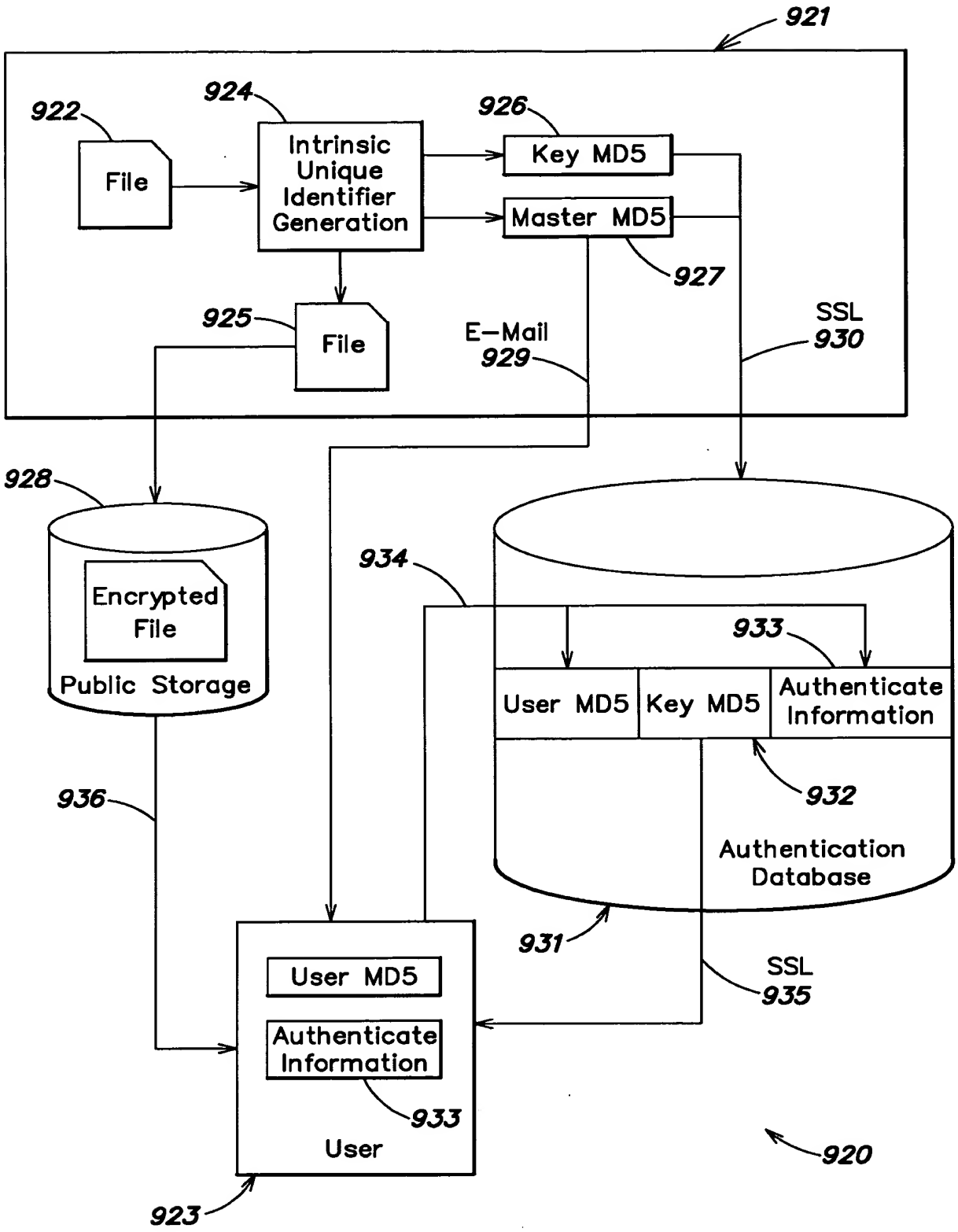
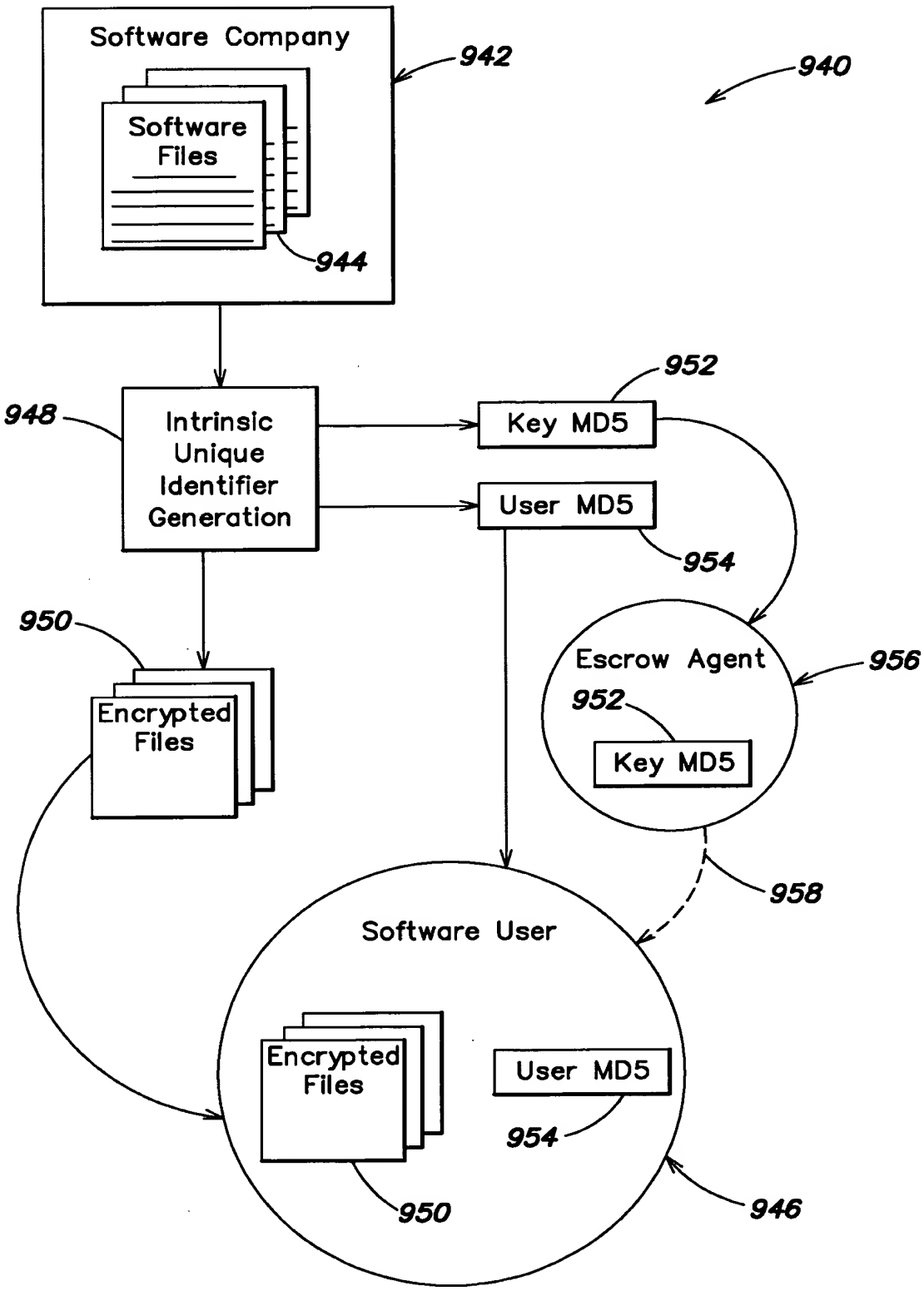

Secure Storage Example
900
Bank Terminal
914
Secure
Banking Application
Master MD5
Key MD5
912
902
Customer
Signature Card
File
904
Intrinsic
Unique
Identifier
Generation
906
Key MD5
Master MD5
908
910
Encrypted
Card File
Internet
Public
Storage
916

FIG. 12



Access Control Example

FIG. 13



Escrow Example

FIG. 14

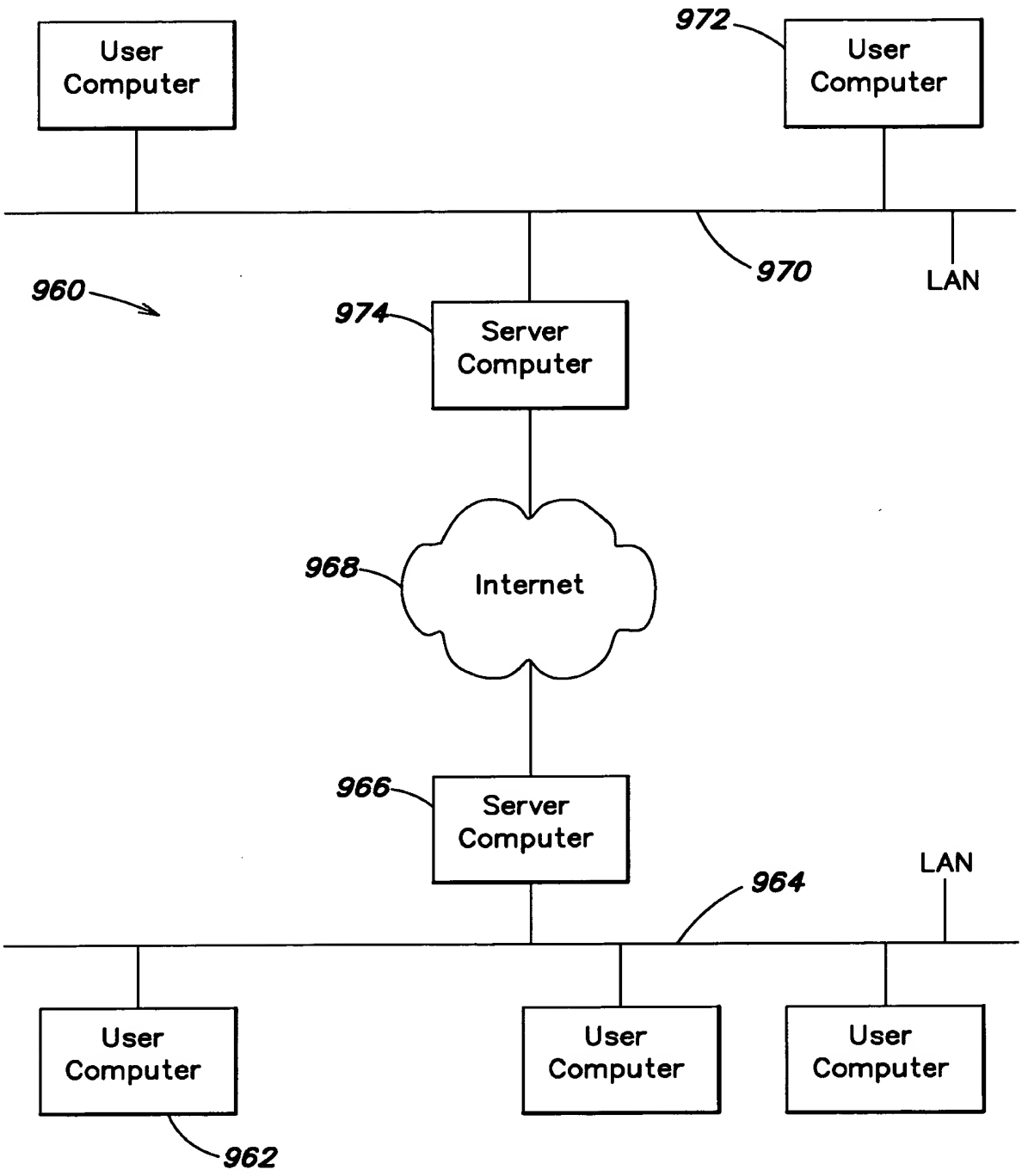

User Computer
972
User Computer
970
LAN
960
974
Server Computer
968
Internet
966
Server Computer
LAN
964
User Computer
User Computer
User Computer
962

FIG. 15

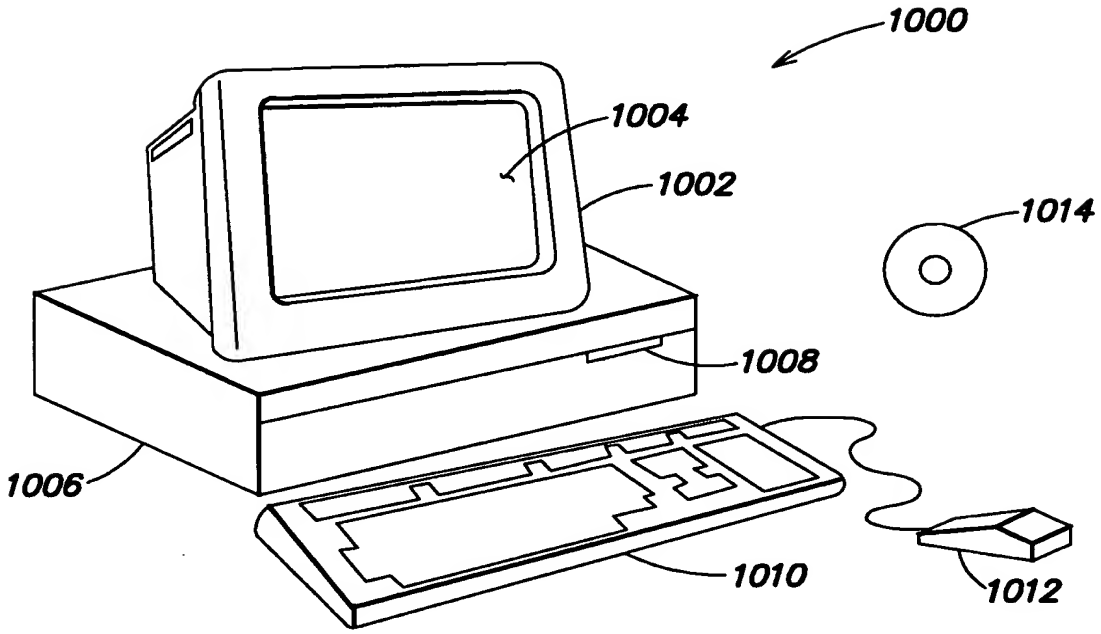

1000
1004
1002
1014
1008
1006
1010
1012

FIG. 16

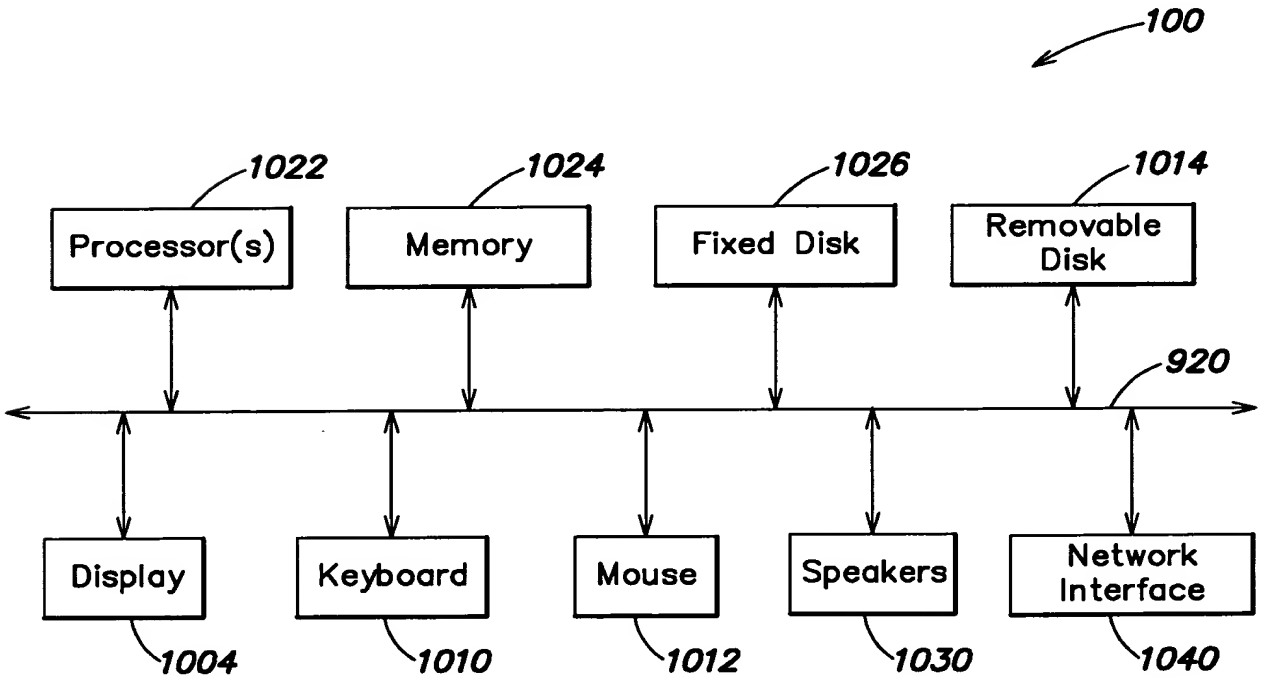

100
1022
1024
1026
1014
Processor(s)
Memory
Fixed Disk
Removable Disk
920
Display
Keyboard
Mouse
Speakers
Network Interface
1004
1010
1012
1030
1040

FIG. 17